PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF
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Supravascular Pericardial Nodules.—KNOX, in a paper entitled "Supra-arterial Epicardial Fibroid Nodules" (*Journal of Experimental Medicine*, 1899, vol. iv., p. 245), describes small nodules which are frequently seen along the branches of the coronary arteries. These he regards as differing from the *periarteritis nodosa* first described by Kussmaul and Maier, and as having no relation to endarteritis. He finds that the outer elastic lamella of the artery immediately beneath the nodule is frequently reduced or has disappeared, and considers this due to irregularities and increase of blood-pressure affecting that part of the bloodvessel wall unsupported by myocardial tissue. In consequence of this the artery wall would here tend to bulge were this tendency not restrained. The formation of dense supra-arterial nodules over the weakened area holds this tendency in check, and may therefore be regarded as an adaptive or compensatory change.

HERXHEIMER ("Ueber supravasale Pericard-Knötchen und Sehnenflecke," *Virchow's Archiv*, 1901, Band clxv., p. 248), studying the same conditions, differs from Knox in some of his conclusions. He agrees that these nodules are distinct from *periarteritis nodosa*, but does not think they depend on any primary change in the bloodvessels, since, contrary to Knox, he finds the vascular changes slight and inconstant. The external elastic lamella, to which Knox attaches special importance, Herxheimer finds to vary greatly, sometimes being increased beneath the nodules, sometimes decreased, and the same variations occur where no nodules are superimposed on the bloodvessel.

Both find that the nodules develop outside the adventitia of the artery from the connective tissue lying between the endothelial and elastic layers of the epicardium—the point of origin, as shown by Meyer and Ribbert, of the milk patches so often found on the epicardium. In all of Herxheimer's cases milk patches also occur, and their mode of origin is the same as that of the nodules. Further, in addition to definite nodules, he finds along the course of the arteries areas of simple thickening of the epicardium, and these can be traced from their earliest beginnings in the epicardial surface. Finally, he describes transitions between these processes. The simple epicardial thickenings may extend along a vessel for some distance, and in some of these places nodules occur. Nodules occur independently of vessels, and by studying serial sections the thickenings along the course of vessels are sometimes seen to be continuous with large epicardial thickenings independent of vessels. From this he concludes that the supravascular nodules and milk patches are structurally and in origin identical.

Three theories have been adduced for the origin of milk patches: (1) They originate from a circumscribed pericarditis; (2) they have a mechanical explanation in chronic vascular pressure changes; (3) they arise from developmental irregularities, perhaps in the endothelium. The weight of evidence is against the first. The third theory is urged from the frequent occurrence of splits lined by endothelium, but Herxheimer considers these as secondary changes arising from endothelial cells caught in from the endothelium of the epicardium, and points out the infrequency of the patches in the newborn as being against a developmental origin. The second theory he supports as explaining both the patches and nodules. Both occur most frequently on the left ventricle and in cases where the evidence points to high and irregular blood-pressure. The arteries, filled with blood, project above the epicardial level and so are more exposed to friction. The nodules occur oftenest in the region of a bifurcation, where pressure is highest. They do not occur in Herxheimer's cases on the arteries lying protected in the sulcus coronarius.—H. A. C.

Bacteriology of the Gall-bladder.—MIECZKOWSKI ("Zur Bakteriologie des Gallen-blaseninhaltes unter normalen Bedingungen und bei der Cholelithiasis," *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1900, Band. vi., p. 307) made a bacteriological study of the bile obtained from fifteen patients on whom laparotomy was performed for diseased conditions affecting other parts than the bile passages and in whom there was no evidence of a pathological condition of the gall-bladder or ducts. He finds the bile aspirated under these conditions to be sterile in every case, and concludes that human bile obtained from a normal gall-bladder is sterile. The same he finds to be true for the gall-bladder and hepatic and cystic ducts of animals, while in the common duct organisms are usually present. The organisms often found in human bile at autopsy he regards as post-mortem invaders.

Though the bile is normally sterile, he shows that it is nevertheless a medium in which bacteria can richly multiply, though not so energetically as in bouillon. This is especially true for B. coli communis.

Mieczkowski considers mechanical conditions to be of more importance in explaining the sterility of the gall-bladder than any bactericidal power of the gall. Bacteria are swept away by the stream of bile; but if this outflow is hindered, as in cases of cholelithiasis, infection takes place. Of twenty-three cases of cholelithiasis the bile in eighteen was infected, fifteen times with B. coli communis alone and three times with this organism plus one of the pyogenic cocci. From this he concludes that cases of cholelithiasis should be regarded as infected cases, since the gall-bladder is rarely sterile, and the absolute virulence of the organisms is heightened by the difficulty in absorption of the bile escaping at the time of operation into the cavity of the abdomen.

EHRET and STALZ ("Experimentale Beiträge zur Lehre v. der Cholelithiasis," *Ibid.*, Band vi., p. 350) do not agree with Mieczkowski in regarding the bile as absolutely sterile, since they claim to be able to demonstrate organisms in the bile of guinea-pigs, dogs, and cattle, provided larger quantities (1 to 4 c.c.) of bile are used in making the cultures. The organisms, however, are few in number, since they, as well as Mieczkowski and others, obtain no growths when small quantities of bile are used.

These two observers consider that the organisms reach the gall-bladder from the intestine by way of the gall-ducts. For the proof of this they developmental irregularities, perhaps in the endothelium. The weight of evidence is against the first. The third theory is urged from the frequent occurrence of splits lined by endothelium, but Herxheimer considers these as secondary changes arising from endothelial cells caught in from the endothelium of the epicardium, and points out the infrequency of the patches in the newborn as being against a developmental origin. The second theory he supports as explaining both the patches and nodules. Both occur most frequently on the left ventricle and in cases where the evidence points to high and irregular blood-pressure. The arteries, filled with blood, project above the epicardial level and so are more exposed to friction. The nodules occur oftenest in the region of a bifurcation, where pressure is highest. They do not occur in Herxheimer's cases on the arteries lying protected in the sulcus coronarius.—H. A. C.

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These two observers consider that the organisms reach the gall-bladder from the intestine by way of the gall-ducts. For the proof of this they adduce the following: If the cystic duct or common duct is ligated, and the bile allowed to escape into the peritoneal cavity, no peritonitis results, while the reverse is true when the common or hepatic duct is ligated; the last procedure interrupts the stream of bile, and so affords an opportunity for organisms to extend up the duct. In the common duct, close above the papilla biliaria, organisms are generally present in considerable numbers.

MIYAKI ("Zur experimentellen Erzeugung d. Gallensteine m. besond. Berücksichtigung d. bakt. Verhaltens d. Gallenwege," *Ibid.*, Band vi., p. 479), in an examination of the bile of seventy-six dogs and rabbits, finds the gall-bladder sterile with one exception (small quantities of bile used in making cultures). From a study of a small number of animals he concludes that in the lower part of the common duct organisms are frequently present, and these are the normal inhabitants of the intestine.

Miyaki also investigated the pathological changes in the gall-bladder necessary to bring about the development of bacteria there. Ligature of the cystic duct produces no change, while ligation of the common duct close to the papilla bilaria causes an infection of the gall-bladder. The introduction of sterile foreign bodies into the gall-bladder produced infection in three out of eight experiments, while in three more animals in which the cystic duct was also ligated the gall-bladder remained sterile. Direct injury to the gall-bladder mucosa caused no infection. Organisms introduced into the gall-bladder, with or without the production of gall stasis, can be recovered in pure culture after periods varying from three days to one year and eight days.

This work seems to show: 1. That the bile is normally sterile in the gall-bladder and cystic and hepatic ducts. The common duct, except in the lower part, is also sterile. If organisms are normally present it is only in very scant numbers. 2. That organisms will multiply in the bile. 3. That conditions favorable to their entrance are not readily produced experimentally, but when introduced the organisms persist. 4. That gallstones favor their entrance, and in cases of cholelithiasis the gall-bladder is almost always infected. 5. That the mode of infection in these cases seems to be by way of the gall ducts from the intestine.—H. A. C.

The Source and Significance of the Cell Masses Occurring in the So-called Nævi of the Skin.—ABESSER (*Virchow's Archiv*, 1901, vol. clxvi., p. 40) says the characteristic feature of the nævus is composed of epithelial-like cells which occur singly, in clumps, and in bands in the papillæ and cutis of the skin. Two views obtain in regard to their origin: The first is that they are derived from the epiderm (Durante, 1871; Unna, 1893); the second, that they arise from the mesoderm (Demiéville, from the endothelium and perithelium of bloodvessels; v. Recklinghausen, from the endothelium of lymph vessels; Ribbert, from the chromatophores). Soldan (1899) regards nævi as neurofibromata. The epithelial origin was favored in 1897 by Waldeyer and Kölliker; later by Marchand and Orth.

Abesser studied in serial sections sixteen small nævi from adults. He found three types of cells present. The most common, which he calls the typical nævus cell, is a round or oval cell of the size of those in the epidermis. It has a vesicular, epithelial-like nucleus, and lightly staining, often invisible, protoplasm. These cells occur usually in round balls in the